MCO 25plus and MCO 50plus

All essential Parameters constantly in Focus
- Otorhinolaryngology
- Gynaecology
- Dermatology
- Aesthetic surgery
- General surgery
- Proctology
MCO 25plus and MCO 50plus
All essential Parameters constantly in Focus

The CO₂ laser is the classic medical laser. It has been used in numerous surgical fields with great success for many years. With the new CO₂ lasers MCO 25plus and MCO 50plus, KLS Martin offers state-of-the-art, cutting-edge laser technology. Whether you consider its uncomplicated operating philosophy, its excellent optical properties or the comprehensive, innovative range of accessories – the MCO25/50plus gives you lots of reasons to decide in favor of a KLS Martin CO₂ laser.

12 good reasons that make a truly convincing case:

- Quick Tip panel for easy and time-saving parameter selection
- Easy-moving beam delivery system with excellent beam characteristics
- Safe locking of the articulated (mirror-joint) arm in two different positions
- Versatile, user-oriented operating modes such as ultra-short single pulses, superpulse mode and cycle mode
- Reliable beam guidance with minimal spot sizes and high power densities
- Five program storage locations for saving user-defined parameter sets
- Integrated, programmable “Soft Scan plus R” scanner for multi-disciplinary use in conjunction with different handpieces and micromanipulators
- Special LineScan function for robotic vocal cord surgery
- Micro scan patterns for laser-assisted stapedial surgery
- Micromanipulator Micro Point 2 with minimal spot size of 0.11 mm and highest power densities
- Possibility to select and turn scan patterns directly via the Micro Point micromanipulator
- Comprehensive range of accessories for numerous medical fields (ENT, gynaecology, dermatology, etc.)
Quick-Tip-Panel

Straightforward operating interface, uncomplicated operating philosophy – properties that any user appreciates. The Quick-Tip panel guarantees easy and fast parameter selection. Only the parameters relevant to the operating mode used are automatically displayed at a time – the essentials in focus!

Five program storage locations, enabling you to save your own sets of parameters

Versatile, user-oriented operating modes. Utmost precision with minimal thermal stress
As little as possible, 
as much as necessary

The digital scanner system SoftScan plus R comes as an integrated part of the laser unit. It offers controlled, reproducible tissue ablation for use in numerous surgical fields – gentle, tissue-sparing laser application for the benefit of the patient.

Integrated, multidisciplinary scanner "SoftScan plus R"

for controlled, superficial tissue vaporization in general and aesthetic surgery. Different handpieces and micromanipulators are available for easy handling. The tissue ablation rate can be controlled via different scanning speeds.

Laser beam with a very high power density

Threshold for tissue ablation

Tissue ablation effect
Micro Point 2 and Mini Point
Unbeatable Variability

The Micro Point 2 and Mini Point micromanipulators enable you to use the system with all commonly available operating microscopes. Together with the CO₂ laser systems, they constitute the “power pack” for microsurgery – offering extremely high power densities with minimal spot sizes.
Micro Point 2 S
Precision at the highest Level

MCO 25plus and MCO 50plus with scanner system SoftScan plus R and micromanipulator Micro Point 2 S – the highly sophisticated laser system for robotic microsurgery in laryngeal surgery.

76-422-00-04
Micromanipulator "Micro Point 2 S" including Micro Switch for selecting and rotating scan patterns

Cordecomy with LineScan function

(With kind support from the Istituto Europeo di Oncologia, Milan, Italy. F. Chiesa, M. Ansarin / ENT)
**MCOplus skinFrac –
No compromise in Aesthetics and Surgery**

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**The 2 in 1 solution for aesthetics**

No compromises anymore with the availability of full aesthetic and surgical capabilities in one CO2 laser unit. In terms of beam quality and thermal tissue effect, the CO2 lasers of the MCOplus series by KLS Martin have set highest standards in recent years.

Especially the unique superpulse function with minimal pulse activation times of 0.3 ms and maximum output powers of 250 W (MCO 25plus) or 500 W (MCO 50plus) have changed the way of performing surgery due to the possibility of setting a „cold laser cut“ with minimized thermal damage to surrounding tissue.

With the new skinFrac function the MCOplus lasers can be equipped with full aesthetic capabilities for state-of-the-art fractional treatments.

**Fractionated vs. ablative scanning**

While the classic ablative scan vaporizes large and defined tissue surfaces, fractionated scanning allows punctuated vaporization of microscopically small tissue surfaces. As a result, fractionated scanning is less traumatic to the skin and the healing process is being accelerated.

Additionally the stimulation of production of new collagen in the dermis can be performed by applying finest energy columns which penetrate into the dermis and spare the largest part of the skin surface.

**Wide choice of indications**

The skinFrac option allows working in five different work modes for optimized cosmetic results.

In softFrac mode, dots of a diameter of 0.8 mm are being ablated on a defined surface. Patients where skin resurfacing is being performed benefit from decreased trauma to the skin compared with the classic ablative technique. Also healing times are significantly reduced compared to the classic method.

The powerFrac mode allows the penetration of the skin into the dermis by finest energy columns with a diameter of just 0.15 mm. The result is the stimulation of production of new collagen. Especially for deeply situated conditions such as acne scars the patient benefits from a less traumatic treatment and faster healing times than with the classic ablative technique.

Additionally the system provides all classical CO2 laser modes such as the „cold cut“ in superpulse mode, ablative scan focussed and defocussed application for surgical cutting and coagulation.
Order information

For MCOplus lasers production date 2013 and younger:

76-501-08-04 Handpiece softFrac
76-502-01-04 Handpiece powerFrac

Upgrade for existing MCOplus lasers until and including production date 2012 with scanner:

76-500-49-04 softFrac upgrade

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**The skinFrac option offers:**

- Wide range of cosmetic and surgical indications
- Intuitive user interface
- Adjustable setting of penetration depth and spot density
- Reduced healing times compared to ablative scanning
- Five work modes for cosmetic and surgical treatments including „cold cut“ in superpulse
- Excellent haemostasis in continuous wave mode
- High return-on-investment by upgradability of existing MCOplus lasers
76-100-05-04
Focusing handpiece, 50 mm, complete (for dermatology and aesthetic surgery)

76-100-10-04*
Focusing handpiece, 127 mm, complete (standard handpiece)

76-100-15-04
Focusing handpiece, 200 mm, complete (for ENT/pharyngeal surgery)

76-500-50-04**
Scanner handpiece, 127 mm, complete (for dermatology and aesthetic surgery)

76-500-60-04**
Scanner handpiece, 200 mm, complete (for dermatology and aesthetic surgery)

76-500-31-04**
“SoftScan plus R” scanner box (w/o handpiece)

76-502-01-04
Handpiece powerFrac

* included in Laser package
** included in Laser with Scanner package
**76-100-20-04**  
Backstop for 127-mm focusing handpiece  
(for ENT/pharyngeal surgery)

**76-100-25-04**  
Backstop for 200-mm focusing handpiece  
(for ENT/pharyngeal surgery)

**76-200-15-04**  
Adapter for angled working parts  
for 200-mm focusing handpiece

**76-200-05-04**  
90° angled working part,  
for 127-mm focusing handpiece  
and 200-mm focusing handpiece  
(in conjunction with adapter 76-200-15-04)

**76-200-10-04**  
120° angled working part,  
for 127-mm focusing handpiece  
and 200-mm focusing handpiece  
(in conjunction with adapter 76-200-15-04)

**76-600-00-04** Special optics set for nasal operations, consisting of:

**76-600-01-04**  
ENT optics

**76-600-04-04**  
120° attachment for ENT optics

**76-600-03-04**  
90-degree attachment for ENT optics

**76-600-02-04**  
0-degree attachment for ENT optics

**76-600-05-04**  
Brush for ENT attachments

Dental tip available on request
### Ordering Data

#### Laser Units and Accessories

<table>
<thead>
<tr>
<th>Ordering Data</th>
<th>KLS Martin CO2 Laser MCO 25plus</th>
<th>KLS Martin CO2 Laser MCO 25plus with integrated scanner (standard accessories same as 77-025-01)</th>
<th>KLS Martin CO2 Laser MCO 50plus</th>
<th>KLS Martin CO2 Laser MCO 50plus with integrated scanner (standard accessories same as 77-050-01)</th>
<th>General accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consisting of basic unit (25 W), articulated (mirror-joint) arm,</td>
<td>27-mm standard focusing handpiece, power cord, foot switch with pilote module ENT</td>
<td>77-025-01-04</td>
<td></td>
<td></td>
<td>Focusing handpiece, 50 mm (complete, incl. detachable tip) 76-100-05-04</td>
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<tr>
<td>Consisting of basic unit (50 W), articulated (mirror-joint) arm,</td>
<td>127-mm standard focusing handpiece, power cord, foot switch with pilote module ENT</td>
<td>77-050-01-04</td>
<td></td>
<td></td>
<td>Tip, detachable, for 50-mm focusing handpiece 76-100-06-04</td>
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<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-025-01-21</td>
<td></td>
<td></td>
<td>Focusing handpiece, 127 mm (complete, incl. detachable tip) 76-100-10-04</td>
</tr>
<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-050-01-21</td>
<td></td>
<td></td>
<td>Tip, detachable, for 127-mm focusing handpiece 76-100-11-04</td>
</tr>
<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-025-11-04</td>
<td></td>
<td></td>
<td>Focusing handpiece, 200 mm (complete, incl. detachable tip) 76-100-15-04</td>
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<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-050-11-04</td>
<td></td>
<td></td>
<td>Tip, detachable, for 200-mm focusing handpiece 76-100-16-04</td>
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<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-025-11-21</td>
<td></td>
<td></td>
<td>Backstop for 127-mm focusing handpiece 76-100-20-04</td>
</tr>
<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-050-11-21</td>
<td></td>
<td></td>
<td>Backstop for 200-mm focusing handpiece 76-100-25-04</td>
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<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-025-11-21</td>
<td></td>
<td></td>
<td>90° angled working part for 127-mm focusing handpiece 76-200-05-04</td>
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<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-050-11-21</td>
<td></td>
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<td>120° angled working part for 127-mm focusing handpiece 76-200-10-04</td>
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<tr>
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<td>with pilote module ENT</td>
<td>77-025-11-21</td>
<td></td>
<td></td>
<td>Adapter for angled working parts for 200-mm focusing handpiece 76-200-15-04</td>
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<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-050-11-21</td>
<td></td>
<td></td>
<td>CO₂ laser protective goggles 1 76-100-50-04</td>
</tr>
<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-025-11-21</td>
<td></td>
<td></td>
<td>CO₂ laser protective goggles for spectacle wearers 2 76-100-51-04</td>
</tr>
<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-050-11-21</td>
<td></td>
<td></td>
<td>Combined CO₂ and Nd:YAG laser protective goggles 3 79-100-50-04</td>
</tr>
<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-025-11-21</td>
<td></td>
<td></td>
<td>Combined CO₂ and Nd:YAG laser protective goggles for spectacle wearers 4 79-100-51-04</td>
</tr>
<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-050-11-21</td>
<td></td>
<td></td>
<td>Pad for laser protection goggles (for item no. 76-100-51-04/79-100-51-04) 79-101-51-04</td>
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<tr>
<td></td>
<td>with pilote module ENT</td>
<td>77-025-11-21</td>
<td></td>
<td></td>
<td>Strap for laser protection glasses (for item no. 76-100-51-04/79-100-51-04) 79-101-50-04</td>
</tr>
</tbody>
</table>

All laser units are available with or without scanner.

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1. D 9000–10600 L5 RH DIN CE acc. to 89/686/EEC (PPE)
2. D 9000–11000 L4 RH DIN CE acc. to 89/686/EEC (PPE)
5. ZEISS adapter inclusive
### Micromanipulators

- "Mini Point" (gynaecology, proctology) 76-400-00-04
- "Micro Point 2" (ENT) 76-402-00-04
- "Micro Point 2 S", incl. Micro Switch (ENT) 76-422-00-04

### Adapters for Mini Point

<table>
<thead>
<tr>
<th>Adapter, System</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zeiss system</td>
<td>76-400-10-04</td>
</tr>
<tr>
<td>Möller-Wedel system</td>
<td>76-400-12-04</td>
</tr>
<tr>
<td>Leica system</td>
<td>76-400-13-04</td>
</tr>
<tr>
<td>Zeiss OPMI FC 1</td>
<td>76-400-14-04</td>
</tr>
<tr>
<td>Möller-Wedel VM 500</td>
<td>76-400-15-04</td>
</tr>
<tr>
<td>Leica M 841</td>
<td>76-400-16-04</td>
</tr>
<tr>
<td>Olympus OCS-500</td>
<td>76-400-17-04</td>
</tr>
<tr>
<td>Zeiss 150 FC</td>
<td>76-400-18-04</td>
</tr>
</tbody>
</table>

(Other adapters available on request)

### Adapters for Micro Point 2 and Micro Point 2 S

<table>
<thead>
<tr>
<th>Adapter, System</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leica M 650/651/655 systems</td>
<td>76-401-01-04</td>
</tr>
<tr>
<td>Leica M 680</td>
<td>76-401-02-04</td>
</tr>
<tr>
<td>Möller-Wedel VM 900</td>
<td>76-401-03-04</td>
</tr>
<tr>
<td>Leica M 841, complete</td>
<td>76-401-04-04</td>
</tr>
<tr>
<td>Olympus OCS-500</td>
<td>76-401-05-04</td>
</tr>
<tr>
<td>Opmi Drape, complete</td>
<td>76-401-06-04</td>
</tr>
<tr>
<td>Opmi 6, complete</td>
<td>76-401-07-04</td>
</tr>
<tr>
<td>Leica M 520, complete</td>
<td>76-401-08-04</td>
</tr>
</tbody>
</table>

### Adapters for Mini Point, Micro Point 2 and Micro Point 2 S

<table>
<thead>
<tr>
<th>Adapter, System</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaps system 42/52/62</td>
<td>76-401-11-04</td>
</tr>
</tbody>
</table>

### Micro Switch for micromanipulator

Micro Point 2 in connection with LineScan 76-401-30-04

### Scanner

- "SoftScan plus R" scanner retrofit kit or MCO 25plus 76-500-01-04
- "SoftScan plus R" scanner retrofit kit for MCO 50plus 76-500-02-04

The retrofit kits (complete) include:
- scanner head, complete - 76-500-03-04
- scanner connecting cable - 76-500-04-04
- scanner handpiece, 127 mm (complete, incl. tip) - 76-500-05-04
- scanner handpiece, 200 mm (complete, incl. tip) - 76-500-06-04
- incl. all technical components

### Accessories for laparoscopy

Optics, f = 400 mm, laparoscopic connector Karl Storz/Olympus 76-301-00-04
Connector Olympus complete (w/o optics) 76-302-00-04
Connector Karl Storz complete (w/o optics) 76-303-00-04

### Special accessories

Special optics set for nasal operations, consisting of:
- optics - 76-600-01-04
- 0-degree attachment for optics - 76-600-02-04
- 90-degree attachment for optics - 76-600-03-04
- 120-degree attachment for optics - 76-600-04-04
- brush for attachments - 76-600-05-04
**Technical Data**

**Laser Units and Accessories**

<table>
<thead>
<tr>
<th>MCO 25plus</th>
<th>MCO 50plus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of laser</strong></td>
<td>MCO 25plus</td>
</tr>
<tr>
<td><strong>Wavelength</strong></td>
<td>10.6 µm, infrared</td>
</tr>
<tr>
<td><strong>Laser power (applied to tissue)</strong></td>
<td>2–25 W</td>
</tr>
<tr>
<td><strong>CO₂ laser tube</strong></td>
<td>sealed off, DC-excited</td>
</tr>
</tbody>
</table>

**Operating modes:**
- Continuous-wave (CW) 2–25 W 2–50 W
- Superpulse 0.3 ms; 11 W, average, max. power 0.3 ms; 16 W, average, max. power
- Single pulse 5 ms – 10 s output power: 10–25 W 10 ms – 10 s, output power: 10–50 W
- Pulse train minimum pulse length: 5 ms average output power: < 0.1 – 25 W minimum pulse length: 8 ms average output power: < 0.1 – 50 W
- Cyclically repeated pulses cycle length: - permanent cycle length: - permanent - 10 ms – 10 s

- **Pilot laser light** Diode laser, continuously adjustable Diode laser, continuously adjustable
  - 635 nm, ≤ 5 mW, light-red 635 nm, ≤ 5 mW, light-red
- **Laser beam delivery** Articulated spring arm with 7 joints/mirrors, arm length = 1,300 mm, handpiece exchangeable Articulated spring arm with 7 joints/mirrors, arm length = 1,300 mm
- **Focus diameter**
  - 0.08 mm with a focal distance of 50 mm (spot size) 0.08 mm with a focal distance of 50 mm (spot size)
  - 0.20 mm with the standard focal distance of 127 mm 0.20 mm with the standard focal distance of 127 mm
  - 0.32 mm with a focal distance of 200 mm 0.32 mm with a focal distance of 200 mm
- **Operator/control panel** Bluemode LCD (liquid crystal display) with illuminated buttons featuring symbols, keypad sealed, with integrated scanner functions Bluemode LCD (liquid crystal display) with illuminated buttons featuring symbols, keypad sealed, with integrated scanner functions
- **Program memory** 5 freely assignable memory locations (can be used for scanner as well) 5 freely assignable memory locations (can be used for scanner as well)
- **Cooling** internal internal
- **Power requirements** 230 V / 4 A, 50 / 60 Hz 230 V / 4 A, 50 / 60 Hz
- **Protection class** I I
- **Type (of applied part)** B B
- **Laser class** 4 4
- **Dimensions** 290 x 450 x 1,950 mm 290 x 450 x 2,170 mm
- **Height with articulated arm folded down** 1,180 mm 1,630 mm
- **Weight** 57 kg 62 kg
## Optional Accessories

### Mini Point micromanipulator
- Zoom range continuously adjustable between 200 and 400 mm
- Focal length: 200 mm, 250 mm, 300 mm, 350 mm, 400 mm
- Spot diameter: 0.36 mm, 0.47 mm, 0.56 mm, 0.65 mm, 0.76 mm
- Power density (with 25 W): 24.5 kW/cm², 14.5 kW/cm², 10.2 kW/cm², 7.5 kW/cm², 5.5 kW/cm²

### Micro Point 2 / Micro Point 2 S micromanipulator
- Zoom range continuously adjustable between 225 and 500 mm
- Focal length: 225 mm, 250 mm, 300 mm, 350 mm, 400 mm, 450 mm, 500 mm
- Spot diameter: 0.110 mm, 0.120 mm, 0.130 mm, 0.135 mm, 0.140 mm, 0.145 mm, 0.150 mm
- Power density (with 25 W): 263 kW/cm², 221 kW/cm², 188 kW/cm², 175 kW/cm², 163 kW/cm², 151 kW/cm², 141 kW/cm²

### SoftScan plus R scanner
- 6 different scan patterns in different sizes and positions for tissue vaporization
- 3 different line patterns with variable length for robotic tissue resection
- Electronically rotatable micro scan patterns ranging from 0.4 mm to 2.0 mm, especially for otology
- Rotation via micromanipulator Micro Point
- Operating/control functions integrated into the laser unit’s display screen
- Irradiation time per treatment spot (depending on selected parameters): 0.15–1.2 ms
- Scan pattern representation with pilot laser during treatment pauses as well
- Energy densities with 127-mm handpiece: MCO 25plus: max. 24 J/cm²
  
  MCO 50plus: max. 48 J/cm²